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Estimation of Lipid Profile In Renal Transplant Patients: A Case Control Study at Gezira renal hospital Gezira state –Wad Madani – (Sudan) (2017)

Hussam Eldin Atta Almanan Hassan

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Estimation of Lipid Profile In Renal Transplant Patients: A Case Control Study at Gezira renal hospital Gezira state –Wad Madani – (Sudan (2017)

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Date Examination:  /   /2016
Declaration

Iam Hussam Eldin Atta Almanan Hassan

Confirm that the work for the
Following term dissertation

With the title:

Estimation of Lipid Profile In Renal Transplant Patients: A Case Control Study at Gezira renal hospital Gezira state –Wad Madani – (Sudan (2017)

Was solely undertaken by myself and that no help was provided from other sources as those allowed. All sections of the thesis that use quotes or describe an argument or concept developed by another author have been referenced, including all secondary literature used, to show that this material has been adopted to support my thesis.
Dedication

I dedicate this work to my mother and father who always picked me up on time and encouraged me to go on every adventure especially this one

To my brothers & sister

To my friends whose carrying support it would not have been possible and to my wonderful brother

I dedicate this work and give special thanks to my college, has never left my side and to my sister

To my Soul mate (My wife). To my Dark Angels who lead me to inspire & hope (DAAN & JWAN)
**Acknowledgement**

Praise is to Allah, The Almighty, who gave us health, strength, and patience to carry out this work.

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Finally my thanks expressed to all those who encourage me and follow me to achieve this work.

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Abstract

Kidney transplantation is treatment for many patients who have or are developing end-stage renal disease (ESRD) and who are undergoing, chronic dialysis therapy. Transplant patient are suffering from many abnormalities that affect tissue transplant. To assess lipid profile in Sudanese patient with renal transplant in Gezira hospital for renal diseases and surgery. This a cross sectional, case-control laboratory based study. , and about 40 samples from patient with renal transplant in Gezira hospital for renal diseases and surgery. Were collected according to inclusion exclusion criteria and 40 samples were collected from healthy as control ( Male and Female ). All sample were tested for lipid profile by cobas, the results were analyzed using (spss),computer program version 17. The study showed that, there are significant decrease between Triglyceride ($P.value=0.000$), High Density Lipoprotein($P.value=0.004$), and Cholesterol($P.value=0.000$) between case and control. And insignificant in Low Density Lipoprotein($P.value=0.032$).There is significant correlation between Triglyceride($P.value=0.008$) and gender, and insignificant in Cholesterol($P.value=0.698$), High Density Lipoprotein($P.value=0.991$) and Low Density Lipoprotein($P.value=0.718$). There is significant correlation between Triglyceride($P.value=0.000$), Cholesterol($P.value=0.001$) and High Density Lipoprotein($P.value=0.002$) and age group. From the result of this study, lipid profile in renal transplanted patients should be routinely investigated.
قياس الدهون في مرضى زراعة الكلى: دراسة الحالة في مستشفى الجزيرة لأمراض وراحة الكلى - ولاية الجزيرة - السودان 2017

حسام الدين عطا المنان حسن عبد القادر

ملخص الدراسة:

زراعة الكلى هي العلاج لكثير من المرضى الذين لديهم أمراض كلى أو مصابون بأمراض الكلى في مراحل متأخرة، والذين يخضعون للعلاج بالغسيل الكلوي. ومع ذلك فإن زراعة الكلى ليست هي أفضل علاج لجميع المرضى، ومرضى زراعة الكلى يعانون من العديد من التشوهات التي تؤثر على الأنسجة مثل ذلك (إسطوانة الدهون). الهدف: قياس الدهون في المرضى السودانيين الذين خضعوا لعملية زراعة كلى في مستشفى الجزيرة لأمراض وراحة الكلى. المواد والطريقة: 35 عينة تم جمعها من المرضى الزارعين للكلى في مستشفى الجزيرة لأمراض وراحة الكلى؛ تم اختبارهم عشوائيا، ثم اختبار 30 من الأشخاص الطبيعيين كعينات ضبط. جميع العينات تم اختبارها لإقياس الدهون باستخدام جهاز الكوباس وتم تحليل النتائج باستخدام الإحصائية للعلوم الاجتماعية حزمة (SPSS)، برنامج كمبيوتر. النتيجة: أظهرت الدراسة أن هناك تأثير كبير بين الدهون الثلاثية (P.value = 0.000)، والكوليسترول (P.value = 0.000)، والدهون عالية الكثافة (P.value = 0.000)، والدهون منخفضة الكثافة (P.value = 0.032) في الكوليسترول (P.value = 0.000) والدهون منخفضة الكثافة (P.value = 0.000). أيضا هناك تأثير كبير بين الدهون الثلاثية (P.value = 0.001) والفئة العمرية. الخلاص: من نتائج هذه الدراسة، نخلص إلى أن مستوى الكوليسترول والدهون الثلاثية (P.value = 0.001) والدهون عالية الكثافة (P.value = 0.000) والدهون منخفضة الكثافة (P.value = 0.001) ذات تأثير كبير في المرضى الزارعين، ونوع الجنس والحجم، وغير ذات تأثير (P.value = 0.991).”
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CH : Cholesterol.
TG : Triglyceride.
HDL : High Density Lipoprotein.
LDL : Low Density Lipoprotein.
CVD : Cardiovascular Diseases.
ESRD : End-Stage Renal Disease.
CAD : Coronary Artery Disease.
CHAPTER ONE
INTRODUCTION

1.1 Introduction

Kidney transplantation is the preferred treatment option for many patients who have or are developing end-stage renal disease (ESRD) and who are undergoing, chronic dialysis therapy. However transplant is not the best treatment for all patients,(Clinical Guideline,2015). The transplanted kidney takes over the work of two kidneys that failed so you no longer need dialysis. During the transplant the surgeon places the new kidney in your lower abdomen and connects the artery and vein of new kidney to your artery and vein ,often the new kidney will start making urine as soon as your blood starts flowing through it. But sometimes it takes a few weeks to start working, (National institutes of health,2015). Dyslipidemia is common in patients with renal disease (Attman PO, Samuelsson D et al,1993),( Markel MS et al,1994). Atherogenic changes in the level and composition of lipoproteins that are recognized as risk factors for cardiovascular diseases (CVD) in the general population occur in a majority of patients with renal disease .(Massy ZA, Kasiske BL,1996),(Mittman N, Avram MM,1996),(Sutherland WHT,1995). The reported prevalence of dyslipidemia in renal transplant patients ranges from 16-72% depending on the patient population and the time point after transplantation when serum lipids were examined (Catin SD, et al,1994). Before the advent of immunosuppression, renal transplantation was limited to identical twins and was not applicable to the vast majority of patients with ESRD. The introduction of combined azathioprine-steroid therapy in 1963 produced encouraging results and became the mainstay of immunosuppression. Although this therapy improved the results of transplantation, acute rejection and complications associated with steroid therapy persisted. The introduction of cyclosporine in 1983 significantly improved the outcomes of all solid-organ transplants by reducing the risk of rejection. Further innovations, including anti-T cell antibodies (both monoclonal and polyclonal preparations), as well as other maintenance immunosuppressant’s (e.g. tacrolimus, mycophenolate, sirolimus), have made a significant impact on both patient and graft survival. Currently, 1-year patient and graft survival rates exceed 90% in most transplant centers.(www.emedicine.medscape.com/article/430128-)
1.2 Rationale and justification:

Dyslipidemia is common in patients with renal disease (Keane 1990) and the reported prevalence of dyslipidemia in renal transplant patients ranges from 16-72% (Catin et al, 1994). No available published data found in the study area, whoever in Gezira State There is a reference hospital for renal diseases and surgery.

1.3 Objective:

1.3.1 General objective:

To assess lipid profile in Sudanese patient with renal transplant in Gezira hospital for renal diseases & surgery.

1.3.2 Specific objective:

To measure lipid profile in blood sample in renal transplant patient.

To find relationship between lipid profile duration of renal transplanted.
CHAPTER TWO
LITERATURE REVIEW

The kidneys are vital organs that perform a variety of important functions. The most prominent functions are removal of unwanted substances from plasma (both waste and surplus), homeostasis (maintenance of equilibrium) of the body’s water, electrolyte and acid-base status, and participation in hormonal regulation. In the clinical laboratory, kidney function tests are used in assessment of renal disease, water balance, and acid-base disorders and in situations of trauma, head injury, surgery, and infectious disease (Michael et al., 2010).

2.1 Renal anatomy:

The kidneys are paired, bean-shaped organs located retroperitoneally on either side of the spinal column. Macroscopically, a fibrous capsule of connective tissue encloses each kidney. When dissected longitudinally, two regions can be clearly discerned—an outer region called the cortex and an inner region called the medulla. The pelvis can also be seen. It is a basin-like cavity at the upper end of the ureter into which newly formed urine passes. The bilateral ureters are thick-walled canals, connecting the kidneys to the urinary bladder. Urine is temporarily stored in the bladder until voided from the body by way of the urethra (Barbara et al., 2006).

Figure (2.1): Kidney anatomy
1 million nephrons. Each nephron is a complex apparatus comprised of five basic parts:

- **The glomerulus**—a capillary tuft surrounded by the expanded end of a renal tubule known as Bowman’s capsule. Each glomerulus is supplied by an afferent arteriole carrying the blood in and an efferent arteriole carrying the blood out. The efferent arteriole branches into peritubular capillaries that supply the tubule (Barbara *et al*., 2006).

- **The proximal convoluted tubule**—located in the cortex.

- **The long loop of Henle**—composed of the thin descending limb, which spans the medulla, and the ascending limb, which is located in both the medulla and the cortex, composed of a region that is thin and then thick.

- **The distal convoluted tubule**—located in the cortex.

- **The collecting duct**—formed by two or more distal convoluted tubules as they pass back down through the cortex and the medulla to collect the urine that drains from each nephron. Collecting ducts eventually merge and empty their contents into the renal pelvis. (Michael *et al*., 2013)
2.2 KIDNEY FUNCTIONS:

Urine formation, fluid and electrolyte balance, regulation of acid-base balance, excretion of the waste products of protein metabolism, excretion of drugs and toxins, secretion of hormones, renin, erythropoietin, 1,25-Dihydroxy vitamin D3 and prostaglandins. (Michael L. Bishop 2013)

2.3 RENAL PHYSIOLOGY:

There are three basic renal processes:

Glomerular filtration, tubular reabsorption and tubular secretion.

2.3.1 Glomerular Filtration:

The glomerulus is the first part of the nephron and functionsto filter incoming blood. Several factors facilitate filtration. One factor is the unusually high pressure in theglomerular capillaries. Another factor is the semipermeableglomerular basement membrane. Inaddition, because the basement membrane is negativelycharged, negatively charged molecules, such as proteins, are
repelled. Of the 1200–1500 mL of blood that the kidneys receive each minute (approximately one quarter of the total cardiac output), the glomerulus filters out 125–130 mL of an essentially protein-free, cell-free fluid, called glomerular filtrate (Vander et al., 1998.)

2.3.2 Tubular Function:

A-Proximal Convulated Tubule:

The proximal tubule is the next part of the nephron to receive the now cell-free and essentially protein-free blood. One function of the proximal tubule is to return the bulk of each valuable substance back to the blood circulation. When the concentration of the filtered substance exceeds the capacity of the transport system, the substance is then excreted in the urine. The plasma concentration above which the substance appears in urine is known as the renal threshold, and its determination is useful in assessing both tubular function and non-renal disease states. A second function of the proximal tubule is to secrete products of kidney tubular cell metabolism. Transport across the membrane of the cell is again either active or passive. (Kleinman and Lorenz, 2003).

B-Loop of Henle:

The loop of Henle or Henle's loop is the portion of a nephron that leads from the proximal convoluted tubule to the distal convoluted tubule. Named after its discoverer, the German anatomist Friedrich Gustav Jakob Henle, the loop of Henle's main function is to create a concentration gradient in the medulla of the kidney (Dunn et al., 2011).

C-Distal Convoluted Tubule:

The distal convoluted tubule is much shorter than the proximal tubule, with two or three coils that connect to a collecting duct. The function of the distal tubule is to effect small adjustmentsto achieve electrolyte and acid-base homeostasis. These adjustments occur under the hormonal control of both antidiuretic hormone (ADH) and aldosterone (Michael et al., 2013).

D-Collecting Duct:

The collecting ducts are the final site for either concentrating or diluting urine. The hormones ADH and aldosterone act on this segment of the nephron to control reabsorption of water and sodium. Chloride and urea are also reabsorbed here (Davies and Blakely, 2001).
2.4 RENAL FAILURE:-

Renal failure can occur rapidly or over time posing a serious even life-threatening risk to the patient. This situation requires measures such as dialysis or kidney transplant to rid the body of toxic nitrogenous wastes that the kidney is no longer able to remove.

2.4.1 ACUTE RENAL FAILURE:-

Acute (sudden) kidney failure is the sudden loss of the ability of the kidneys to remove waste and concentrate urine without losing electrolytes. There are many possible causes of kidney damage that precipitate this condition. They include decreased blood flow, which may occur with extremely low blood pressure caused by trauma, surgery, serious illnesses, septic shock, hemorrhage, burns, or dehydration; acute tubular necrosis, infections that directly injure the kidney such as acute pyelonephritis or septicemia; urinary tract obstruction (obstructive uropathy); autoimmune kidney disease such as interstitial nephritis or acute nephritic syndrome; disorders that cause clotting within the thin blood vessels of the kidney; transfusion reaction; and many more (Lillian and Kristy, 2011).

2.4.2 CHRONIC RENAL FAILURE:-

The rate of chronic renal failure progression varies from several months to many years. This progression occurs in these four stages: (a) diminished renal reserve (GFR drops to about 50% of normal), (b) renal insufficiency (GFR drops from 20 to 50%, azotemia, anemia, and hypertension begin), (c) renal failure (GFR is less than 20%, kidneys cannot regulate volume and solute concentration, and metabolic acidosis, edema, and hyperkalemia develop), and (d) end stage renal disease (GFR less than 5% of normal, glomerular scarring and reduction of renal capillaries, tubular atrophy and fibrosis, and loss of kidney mass and dialysis or transplantation may be required for survival (Lillian and Kristy, 2011).
2.5 Kidney transplantation:

Is the preferred treatment option for many patients who have or are developing end-stage renal disease and who are, or will be undergoing, chronic dialysis therapy. However transplant is not the best treatment for all patients. (Clinical Guideline, 2015). The transplanted kidney takes over the work of two kidneys that failed so you no longer need dialysis. During the transplant the surgeon places the new kidney in your lower abdomen and connects the artery and vein of new kidney to your artery and vein, often the new kidney will start making urine as soon as your blood starts flowing through it, but sometimes it takes a few weeks to start working. (National institutes of health kidney, 2015).

2.5.1 Type of transplant donors recipient may receive:

a-Living donor: Provides excellent health of a donor kidney, improved long term survival, and the ability to receive a transplant in a timely manner. The live donor is usually a family member or a friend. Medical assessments are conducted to determine whether the donor is a compatible and healthy match for the transplant. If there is matched living
donor who has given informed consent, they are called a compatible pair. The time of transplant surgery is scheduled based on the availability and wish of the donor and the best possible health of the recipient and operating times available.

b-Paired Exchange: Thirty percent of potential kidney donors are suitable but not compatible with the intended recipient. This means the donor's blood type is not compatible with the recipient's blood type or the recipient has antibodies that will reject that donor's kidney. Suitable kidney donors who are incompatible with their recipients will be given the option of entering into the Canadian Living Donor Paired Exchange Program (LDPE). This registry attempts to find exchange combinations so that the intended recipient can receive a compatible kidney and donor can donate to a compatible recipient. (Clinical Guidelines, 2015; Montgomery et al., 2006; Butt et al., 2009).

c-Deceased Donor: Deceased donor transplant occurs when a kidney is donated by someone who has died very recently in hospital and the family and appropriate consent for donation has been given. Approved transplant candidates who do not have potential living donors are placed on a waiting list for these organs.
2.5.2 Preparation of renal transplantation:

For a transplant from a living donor, members of the transplant team will:

- Discuss living donor transplantation with the recipient.
- Encourage discussion between potential donors and the recipient.
- Describe in detail the procedure, implications, risks and benefits to the intended donor.
- Take blood samples for ABO, HLA typing, virology and initial cross match to identify the optimal donor match.
- Encourage the donor to carefully consider the decision to donate before proceeding and discuss all questions fully.
- Perform the evaluation which covers all medical, surgical, social and psychological aspects.
- Book the surgery.
- Repeat the cross match prior to surgery.

2.5.3 Suitable deceased kidney donor:

- Is normally less than 70 years of age.
- Has no evidence of irreversible renal dysfunction.
- Has no known risk factors for transmission of disease to the recipient.
- Has no known transmittable disease or malignancy (Clinical Guidelines, 2015; Montgomery et al., 2006; Butt et al., 2009).

2.5.4 Post transplantation:

Complication in early post-operative phase

Major Complications which can occur in the early post-operative phase include

- Delayed graft function (DGF) infection
- Graft rejection

a. Delayed Graft Function: Poor initial graft function occurs in less than 5% of living donor recipients and less than 20% of deceased donor recipients.
The patient is normally oliguric, although non-oliguric renal dysfunction may occur. When the transplanted kidney is not functioning it is critical to exclude arterial or venous occlusion and urinary obstruction or leak. This is determined by an urgent ultrasound with Doppler to assess kidney flow. Patients with surgical problems may need urgent reoperation. The overwhelming majority of kidney grafts with poor function may simply have a delay in graft function. Dialysis will be instituted and fluid and dietary restrictions are commenced as appropriate. All medications requiring dosage adjustments for renal failure are reviewed.

**b.Infection:** Infection remains an important cause of morbidity and mortality following transplantation, although the use of prophylactic antibiotic therapy at the time of surgery has markedly decreased these risks. Infection occurs in up to 30% of renal transplant recipients during the first three months after transplant. Early diagnosis and appropriate treatment are essential.

**-Bacterial infection:** Most common during the first four weeks post-transplant. Infection may occur at the wound site, in the urinary tract, or in the lung. If inadequately treated, local infection may rapidly progress to systemic sepsis, particularly in diabetic patients.11

**-Viral infection:** Usually seen between 4 to 26 weeks after transplant, particularly in individuals treated with anti-thymocyte globulin. The principal viral infections are: Herpes simplex (HSV) stomatitis Cytomegalovirus (CMV) infection (Clinical Guidelines, 2015; Montgomery *et al.*, 2006; Butt *et al.*, 2009).

**2.5.5 Standing lab orders:**

Routine Tests (Pre-clinic):

Blood work: Prior to each clinic visit, patients should have the following routine blood work done:

- CBC (Hgb, platelets, WBC, differential)
- K, Na, Cl, CO2, Ca, PO4
- Glucose (fasting)
- Creatinine, urea
• Total and direct bilirubin
• Liver enzymes – alkaline phosphatase, ALT, AST
• Albumin

Cyclosporine: Cyclosporine blood concentrations are required for patients on cyclosporine. Blood concentrations taken two hours post cyclosporine dose (C2) are preferred over trough levels. Tacrolimus: Trough levels are required for patients on tacrolimus.

Fasting Blood Sugar and HgA1C: All patients should have fasting blood sugars done with all of their bloodwork in the first 6 weeks post-transplant and then at least every 3 months. All diabetic patients should have an HgA1C done every three months. HBA1C testing is not recommended for screening in non-diabetics.

Lipid studies: All patients should have lipid studies (total cholesterol, LDL, HDL and triglycerides) done every 6 months post-transplant.

Urine tests: Prior to each clinic visit patients should have a routine urine culture and sensitivity (C and S) test, urinalysis and urine albumin creatinine ratio (ACR). ACR replaces the 24 hour urine.

If the values are abnormal, then follow-up tests may be done at more frequent intervals. (Clinical Guidelines, 2015).

2.6 Immunocompromised drugs:

Human organ transplantation, a topic of science fiction in past years, is now a reality. Development of various immunosuppressive agents such as ciclosporine (cyclosporine A (or CyA) and tacrolimus (FK 506) has minimized the significance of obtaining a perfect tissue match between donor and recipient. These advances will further increase the clinical application of human-to-human organ transplantation in coming years.
2.6.1 **PROGRAF(Tacrolimus):** is a prescription medicine used with other medicines to help prevent organ rejection in people who have had a kidney, liver, or heart transplant. ([https://www.prograf.com/](https://www.prograf.com/))

PROGRAF can cause serious side effects, including:

- Increased risk of cancer. People who take PROGRAF have an increased risk of getting some kinds of cancer, including skin and lymph gland cancer (lymphoma).

- Increased risk of infection. PROGRAF is a medicine that affects your immune system. PROGRAF can lower the ability of your immune system to fight infections. Serious infections can happen in people receiving PROGRAF that can cause death. Call your doctor right away if you have symptoms of an infection such as fever, sweats or chills, cough or flu-like symptoms, muscle aches, and/or warm, red, or painful areas on your skin. ([https://www.prograf.com/](https://www.prograf.com/))

2.6.2 **Cyclosporine:** is used to prevent organ rejection in people who have received a liver, kidney, or heart transplant. It is usually taken along with other medications to allow your new organ to function normally. Cyclosporine belongs to a class of drugs known as immunosuppressant. It works by weakening the immune system to help your body accept the new organ as if it were your own. ([www.webmd.com/drugs/2/drug-5645-5108](http://www.webmd.com/drugs/2/drug-5645-5108))

Cyclosporine can cause serious side effects, including:

- Shaking, headache, dizziness, unusual growth of body hair, nausea/vomiting, diarrhea, stomach upset, or flushing may occur. If any of these effects last or get worse, tell your doctor or pharmacist promptly.

- Unusual growth and swelling of the gums may occur. Brush your teeth and floss daily to reduce this problem. See your dentist regularly.

- This medication may raise your blood pressure. Check your blood pressure regularly and tell your doctor if the results are high. Your doctor may control your blood pressure with medication. ([www.webmd.com/drugs/2/drug-5645-5108](http://www.webmd.com/drugs/2/drug-5645-5108)).
2.7 Lipid profile:

-Dyslipidemia is common in patients with renal disease, there is direct relation between dyslipidemia and renal transplant patient (Attman PO, Samuelsson D et al,1993). (Markel MS et al,1994) depending on the patient population and the time point after transplantation when serum lipids were examined (Catin SD, et al,1994).

-Two types of lipids, cholesterol and triglycerides are transported in the blood by lipoprotein particles. Each particle contains a combination of protein, cholesterol, triglyceride, and phospholipids molecules.

-A lipid profile measured with a lipid profile are classified by their density into high-density lipoproteins (HDL), low-density lipoproteins (LDL), and very low-density lipoproteins (VLDL).

-A lipid profile typically includes:

-Total Cholesterol: This test measures all the lipids in the blood. A level of less than 200 mg/dL is desirable.

-Serum Triglycerides: This test measures all the triglycerides in all the lipoprotein particles; most is in the very low-density lipoproteins(VLDL). A level of less than 150 mg/dL is considered desirable.

-High-density lipoprotein cholesterol (HDL-C): HDL – cholesterol measures the cholesterol in HDL particles; often called "good cholesterol” because it removes excess cholesterol and carries it to the liver for removal. An HDL – cholesterol level between 40 and 60 mg/dL is considered normal increase concentration of HDL particle are strongly associated with decreasing accumulation of atherosclerosis within the wall of arteries (American heart, 2009).

-Low-density lipoprotein cholesterol (LDL-C) — calculates the cholesterol in LDL particles; often called "bad cholesterol” because it deposits excess cholesterol in walls of blood vessels,which can contribute to atherosclerosis. Usually, the amount of LDL cholesterol(LDL-C) is calculated using the results of total cholesterol, HDL-C, and triglycerides. Normal measures the level of specific lipids in the blood. Normal range 100-129 mg/dl.(YunpingQiu,et al 2013).
CHAPTER THREE
MATERIALS AND METHODS

3.1 Study design:
This is a cross sectional, case-control laboratory based study.

3.2 Study area:
This study was carried out at Gezira hospital for renal diseases and surgery, Gezira State, Sudan.

3.3 Study subjects and period:
Patients with renal transplanted attended the Gezira renal hospital during 2016 for follow up were included in this study.

3.4 Inclusion criteria:
Renal transplanted patient was included in this study.

3.5 Exclusion criteria:
Patient who reject this study was excluded from the study.

3.6 Sample size:
About 40 patient with renal transplanted and 40 case control were enrolled in this study.

3.6 Data collection:
Data was collected by interview and structured questionnaire, clinical records.

3.8 Sample collection:
After informed consent and use local antiseptic for skin (70%) ethanol, 3 ml of venous blood was collected from each volunteer in this study using disposable plastic syringe. The venous blood poured in a heparin container and directly examined.
3.9 Ethical consideration:

Approval was taken from ministry of health and permission from head director of hospital and written consume from the participant.

3.10 Methodology:

3.10.1 Estimation of lipid profile:

Serum total cholesterol, low density lipoprotein cholesterol (LDL cholesterol), high density lipoprotein cholesterol (HDL cholesterol), and triglycerides (TG) were determined enzymatically according to the reagent manufacturer’s instruction.

3.11 Quality control:

The precision and accuracy of all methods used in this study were checked and was analyzed by Pccc1/Pccc2.

3.12 Statistical analysis:

Data was analyzed by using the spss computer program version 17, independent T test was applied to compare the mean and SD of lipid profile.
CHAPTER FOUR

RESULTS

Table (4.1) Comparison between cholesterol result among cases and control:

There is high significant value.

<table>
<thead>
<tr>
<th>Cases</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>P. Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholesterol Case</td>
<td>35</td>
<td>173.17</td>
<td>48.609</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>136.97</td>
<td>16.493</td>
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</tr>
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</table>

Table (4.2) Comparison between TG result among cases and control:

There is high significant value.

<table>
<thead>
<tr>
<th>Cases</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>P. Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG Case</td>
<td>35</td>
<td>150.69</td>
<td>85.942</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>59.70</td>
<td>24.093</td>
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</tr>
</tbody>
</table>

Table (4.3) Comparison between HDL result among cases and control:

There is high significant value.

<table>
<thead>
<tr>
<th>Cases</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>P. Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL Case</td>
<td>35</td>
<td>49.17</td>
<td>14.210</td>
<td>0.004</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>41.03</td>
<td>7.005</td>
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</table>
Table (4.4): Comparison between LDL result among cases and control:

There is a significant value.

<table>
<thead>
<tr>
<th>Cases</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>P. Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDL Case</td>
<td>35</td>
<td>94.69</td>
<td>32.172</td>
<td>0.032</td>
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<tr>
<td>Control</td>
<td>30</td>
<td>80.77</td>
<td>17.780</td>
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</tr>
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</table>

Table (4.5) Comparison Between Lipid profile and ages among Cases:

There is no significant value.

<table>
<thead>
<tr>
<th>Lipid</th>
<th>20 - 30Year</th>
<th>31 - 40Year</th>
<th>More than 40Year</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholesterol</td>
<td>3</td>
<td>158.00</td>
<td>171.77</td>
<td>176.53</td>
</tr>
<tr>
<td>TG</td>
<td>3</td>
<td>110.00</td>
<td>153.92</td>
<td>154.89</td>
</tr>
<tr>
<td>HDL</td>
<td>3</td>
<td>45.33</td>
<td>43.92</td>
<td>53.37</td>
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<tr>
<td>LDL</td>
<td>3</td>
<td>89.33</td>
<td>96.92</td>
<td>94.00</td>
</tr>
</tbody>
</table>
CHAPTER FIVE
DISCUSSION

5.1 Discussion:
The present study was undertaken to study the lipid profile of renal transplant recipients. The prevalence of post transplant hyperlipidaemia ranges from 16 – 72 % of recipients (First, 1993), depending at which time point post transplantation serum lipid levels were obtained. Hypercholesterolemia occur within 6 months in most patients (82%), whereas the peak incidence of hypertriglyceridemia is at 12 months after transplantation (Vathsala et al., 1989). The association between immunosuppressive therapy and hyperlipidaemia has generally been observed early after transplantation and it remains a possibility that persistent hyperlipidaemia in the late post transplantation period, is the result of factors other than immunosuppressive therapy (Begade et al., 1976). CVD is the most common cause of post transplantation morbidity and mortality among long-term renal transplant survivors (First et al., 1993). Patients with post renal transplantation coronary artery disease (CAD) tend to be older males, diabetic with higher cholesterol levels, greater incidence of smoking and greater number of acute renal allograft rejection episodes and as a consequence, have received more cumulative dose of steroids (Braun et al., 1999). Increased serum TG levels have been implicated as the most consistent predictor of chronic allograft failure (Begade et al., 1976). Assessment of hyperlipidaemia should be initiated soon after transplantation and should be followed by measurement of serum lipid concentrations once a year or earlier when indicated. The inverse correlation between lipid abnormalities and duration of transplant has certain therapeutic implications, in that, lipid profile in the first 8 – 12 months after transplantation is variable, it should not from the basis of therapy. The decision to hyperlipidaemia should be based on the lipid levels and the presence of positive risk factors for CAD including (NCEP, 1993) age>45 years in males, age>55 years for females, family history of premature CDA, current cigarette smoking, blood pressure >140/90 mmHg, HDL-C< 35 mg/dl and diabetes mellitus. Because an increased LDL-C level is the most common lipid abnormality after renal transplantation, it is reasonable to follow the National Cholesterol Education Programme Guideline for treatment. Accordingly transplant recipients with LDL-C level of more than 130 mg/dl should be considered for pharmacologic treatment. Kidney transplantation is treatment of choice for a minority of patients with end-stage renal disease.
(Bradly, 2015). Heart disease, common to hyperlipidemic patients, 10-40% deaths after renal transplantation (Markell et al., 2008). This study, aimed to estimate the lipid profile among renal transplanted patients who attended Gezira renal hospital during 2016 for follow-up. In our study, the level of HDL was found to be significant in patients compared to control and this agrees with (Pannu et al., 2003) which finding conformed that patients who undergo renal transplantation often have end-stage renal disease (ESRD) for years and many of them already have lipid derangement before transplantation. In our study, the correlation between cases and control use cholesterol result, TG result, and HDL result show high significant P.value. But LDL is an insignificant value. In our study, correlation between lipid profile and gender among cases, show significant value in cholesterol (P=0.046) and LDL (P=0.015) (Table 4.5) and this agrees with (MJAFI, 2002). In our study also, correlation between result and Age group, cholesterol (P.V= 0.001), TG (P.V= 0.001) and HDL (P.V= 0.002) show high significant value, this agree with (Kanbay et al., 2006). Increased lipid levels were found to be independent of patient age, sex, donor type, and immunosuppressive drug regimen. After successful renal transplant, though the renal function returns to normal, the lipid profile is reported to remain abnormal (Chan MK, et al. 1988). In our study, the level of HDL, TG, and CH were significant increase when compared to patient control and this disagrees with (Bara, 2013) which find there is no significant increase on the level of HDL, TG, and CH.
CHAPTER SIX
CONCLUSION AND RECOMMENDATION

6.1 Conclusion:
From this study, it concluded that:

- There are significant correlation between TG, HDL, and CH among case and control results.
- There is significant correlation between TG and gender.
- There is significant correlation between TG, CH, and HDL and age.
- The level of TG, HDL, and CH are significant in renal transplanted patient.

6.2 Recommendation:

This study recommended to measured lipid profile in transplanted patients routinely.
Reference:


Clinical Chemistry, SIXTH EDITION, Michael L. Bishop 2013, MS, CLS, MT(ASCP).


Lillian A. Mundt, EdD, CLS(NCA)SpH, MT(ASCP)SH Adventist Health Systems, Hinsdale HospitalHinsdale, IL.Kristy Shanahan, MS, CLS(NCA), MT(ASCP).


Questioner

Name :………………………………………………………………………

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<tr>
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<th>Time of transplantation</th>
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<tr>
<th>Type of drugs used</th>
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<tr>
<td>Prograf</td>
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<td>cyclosporine</td>
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<th>Related diseases:</th>
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<td>HTN</td>
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<td>DM</td>
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<td>Others</td>
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Results:

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<tr>
<th>CH</th>
<th>TG</th>
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<th>HDL</th>
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